

Amended claims

Sub C1
1. A process for the crystallization of xylitol, comprising

- contacting a liquid containing dissolved xylitol with gas suspended fine solid particles containing microcrystalline xylitol;
- causing substantial removal of the solvent component of said liquid and allowing the resulting xylitol material to form an essentially solid composition of matter comprising a multitude of microcrystals of xylitol; and
- causing said xylitol composition to be conditioned during a further drying step to provide a product consisting essentially throughout its entire structure of a multitude of microcrystals of xylitol agglomerated together in a random manner.

Sub B1
2. The process according to claim 1, wherein said liquid is an aqueous solution of xylitol having a xylitol concentration of about 30-80% by weight, preferably about 50-77% by weight.

A
3. The process according to claim 1 ~~or 2~~, comprising heating said liquid to a temperature of about 45-80 °C, preferably about 55-70 °C prior to said contacting.

A
4. The process according to claim 1, ~~2 or 3~~, wherein said contacting comprises spraying said liquid into contact with said suspended fine solid particles.

A
claim 1
5. The process according to ~~any one of the preceding claims~~, wherein said liquid contains a minor portion of an excipient, an active ingredient and/or other sweetener than xylitol.

6. The process according to claim 5, wherein a secondary spray of another liquid containing an excipient, an active ingredient and/or other sweetener than xylitol is simultaneously provided.

claim 1
A
Sub B2
7. The process according to ~~any one of the preceding claims~~, wherein said removal of said solvent is performed by the introduction of a drying gas such as air heated to a temperature of about 55-170 °C, preferably about 80-150 °C, most preferably about 90-130 °C.

sub B2> 8. The process according to claim 7, wherein said solvent is water and said solvent removal provides a xylitol material dried to a free moisture content of about 0.1 to 3%, preferably below 1% while said xylitol material is still in a suspended state.

A ~~claim 1~~
9. The process according to ~~any one of the preceding claims~~, wherein said conditioning is maintained so as to allow xylitol microcrystallization to proceed in said composition.

A sub B3> ~~claim 1~~
10. The process according to ~~any one of the preceding claims~~, wherein said xylitol composition is allowed to settle on a moving belt and to form thereon a substantially continuous agglomerated porous powder layer having a thickness of about 0.5-5 cm, preferably about 1-3 cm.

11. The process according to claim 10, wherein said conditioning includes treating said composition in said agglomerated layer with a drying gas having a temperature of about 50-100°C, for a time of about 10-180 min or more.

12. The process according to claim 11, wherein said conditioning is performed in several successive steps with decreasing drying gas temperatures.

A 13. The process according to claim 11 ~~or 12~~, which further comprises cooling said conditioned agglomerated layer to provide a substantially flat porous and brittle plate comprising microcrystalline xylitol.

A 14. The process according to claim 12 ~~or 13~~, comprising subjecting said plate to a mild comminuting action so as to break up said agglomerated layer.

A ~~claim 1~~
15. The process according to ~~any one of the preceding claims~~, which further comprises fractionating microcrystalline xylitol particles and recirculating at least a portion thereof to provide a feed of said fine solid particles containing microcrystalline xylitol.

sub B4> 16. The process according to claim 15, comprising recovering microcrystalline xylitol particles having a mean particle size of about 0.1-10 mm, preferably about 0.15-0.4 mm.

A ~~claim 1~~
17. The process according to ~~any one of the preceding claims~~, wherein about 30-70%, preferably about 50-80% of the dry substance derives from a feed of solid microcrystalline particles.

claim 1

18. The process according to ~~any one of claims 1 to 7~~, wherein said solid particles are retained in a fluidized state until they have grown to a predetermined weight.

claim 1

19. The process according to ~~any one of the preceding claims~~, comprising recirculating microcrystalline xylitol particles having a mean particle size below about 0.2 mm, preferably below about 0.1 mm.

claim 1

20. The process according to ~~any one of the preceding claims 1 to 19~~, comprising processing said microcrystalline xylitol with optional excipients, carriers and/or active ingredients into a pharmaceutical or oral hygiene product.

claim 1

21. The process according to ~~any one of the preceding claims 1 to 19~~, comprising processing said microcrystalline xylitol into a tablet with optional excipients, carriers and/or active ingredients by direct compression.

claim 1

22. The process according to ~~any one of the preceding claims 1 to 19~~, comprising processing said microcrystalline xylitol into a chewing gum by mixing with conventional chewing gum ingredients.

23. A particulate crystalline xylitol product wherein each particle substantially throughout its entire structure consists of a multitude of suspension crystallized microcrystals of xylitol agglomerated together in a random manner.

24. The xylitol product according to claim 23, having a xylitol purity of more than 80%, preferably more than 90%, most preferably up to 98% or more.

25. The xylitol product according to claim 23 ~~or 24~~, said particles having been produced by microcrystallization of a liquid containing dissolved xylitol together with fine solid particles containing microcrystalline xylitol.

26. The xylitol product according to claim 23, ~~24 or 25~~, wherein about 10-90%, preferably about 30-70%, most preferably 50-80% of the dry substance of the final product derives from a feed of solid microcrystalline particles.

claim 23

27. The xylitol product according to ~~any one of the preceding claims 23 to 26~~, comprising particles having a mean particle size of about 0.1-2 mm, preferably about 0.15-0.4 mm.

claim 23

28. The xylitol product according to ~~any one of the preceding claims 23 to 27~~, wherein the size of the microcrystals in each particle is on an average below 50μ , preferably about 10μ .

claim 23

29. The xylitol product according to ~~any one of the preceding claims 23 to 28~~, comprising a porous and brittle composition containing microcrystals of anhydrous xylitol.

claim 23

30. The xylitol product according to ~~any one of the preceding claims 23 to 29~~, wherein said particulate product additionally contains integrally in its structure additional components such as excipients, active ingredients and/or other sweeteners.

31. Use of the microcrystalline xylitol product according to claim 23 as a bulk sweetener for the total or partial replacement of sucrose.

32. Use of the microcrystalline xylitol product according to claim 23 in confectionery, bakery products, cereals, desserts, jams, beverages, chocolate, table top sweeteners, chewing gum, ice cream, and dietetic products as well as in pharmaceutical products, personal care products and oral hygiene products such as tooth paste or mouth rinse.

33. The use according to claim 32 wherein said xylitol is used in a pharmaceutical preparation as a substantially inert component such as a diluent, carrier, excipient and/or sweetener.

34. Use of the microcrystalline xylitol product according to claim 23 in a non-cariogenic chewing gum.

35. A special sweetener which comprises microcrystalline xylitol according to claim 23.

36. The special sweetener according to claim 35 which is mainly composed of said microcrystalline xylitol.

37. A tablet produced by directly compressing a composition containing suspension crystallized microcrystalline xylitol produced by contacting gas suspended microcrystalline xylitol particles with a xylitol solution, drying said composition to cause xylitol microcrystallization, and conditioning said composition to provide a product consisting essentially throughout its entire structure of a multitude of microcrystals of xylitol agglomerated together in a random manner.

38. A xylitol chewing gum, characterized in that xylitol contained therein is suspension crystallized microcrystalline xylitol produced by contacting gas suspended microcrystalline xylitol particles with a xylitol solution, drying the resulting composition to cause xylitol microcrystallization, and conditioning said composition to provide a product consisting essentially throughout its entire structure of a multitude of microcrystals of xylitol agglomerated together in a random manner.

39. A crystalline xylitol product for use in pharmaceutical or oral hygiene products, characterized in that said xylitol product is produced by contacting gas suspended suspension crystallized microcrystalline xylitol particles with a xylitol solution, drying the resulting composition to cause xylitol microcrystallization, and conditioning said composition to provide a product consisting essentially throughout its entire structure of a multitude of microcrystals of xylitol agglomerated together in a random manner.

add B8